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I, ANNA MAIJA EVERETT, ACTING TEAM LEADER EXAMINATION SUPPORT & SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. PQ 1235 for a patent by DANIEL HILSON filed on 28 June 1999.

WITNESS my hand this
Ninth day of August 2000

A. M. Everett.

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AUSTRALIA

Patents Act 1990

PROVISIONAL SPECIFICATION

Applicant(s):

DANIEL HILSON

Invention Title:

AN INTERNET E-COMMERCE SYSTEM

The invention is described in the following statement:

An Internet E-Commerce System

Field of the Invention

The present invention relates to the field of Internet electronic commerce and, in particular, discloses a hybrid e-commerce system having increased levels of functionality and operability.

Background of the Invention

Traditionally, businesses have carried out activities utilising many different forms of communication. For example, letters, faxes and, more recently, e-mail have been traditionally used to place orders for the goods and services of a business.

Recently, the Internet has been undergoing an explosive growth period. In particular, the "World Wide Web" has provided a new avenue for the conduct of commercial transactions. This has lead to the concept of "E-commerce" in that commercial transactions can be carried over the Internet so as to facilitate a more optimal form of business operation. In particular it allows the direct selling of goods over the Internet from the producer to the consumer.

However, the utilisation of the World Wide Web often requires a high level of skill in the creation of HTML pages, Java scripts etc., in order to create appealing and attractive web pages having a high level of functionality. Additionally, a large number of different programs and hardware are often required. Fore example, browsers, e-mail programs, fax machine or fax software, a html editor, an ftp program etc.

Further, commercial business arrangements also often require separate Electronic Funds Transfer Point of Sale facilities for the conduct of sales transactions which are often totally separate from any Internet service.

Summary of the Invention

It is the object of the present invention to provide for an E-commerce system having advantageous attributes.

In accordance with a first aspect of the present invention, there is provided an electronic commerce system comprising: a series of point of sale terminals providing for point of sale information handling of a business; an interconnection network interconnecting the point of sale terminals to a central database facility; a central database facility for storing information about each of the businesses for access by the operators of the point of sale terminals; and a series of service providers interconnected to the central database facility for meeting requests issued by the point of sale terminals.

Preferably, the system also comprises a series of suppliers interconnected to the central database facility for meeting requests issued by the point of sale terminals. The suppliers can include at least one of: an import/export agent; a warehousing agent or a producer. The service providers can include one of: a third party information vendor providing information upon request; a financial transaction vendor providing financial transaction authorisation upon request; or an order fulfilment vendor providing order fulfilment upon request. The point of sale terminals can include local database information and programs which are preferably downloaded on demand from the central database facility.

Brief Description of the Drawings

Notwithstanding any other forms which may fall within the scope of the present invention, preferred forms of the invention will now be described by way of example only, with reference to the accompanying drawings in which:

Fig. 1 illustrates schematically the arrangement of the preferred embodiment.

Description of Preferred and Other Embodiments

In the preferred embodiment, an interactive system is provided for carrying out our business transactions over the Internet in a simplified and automatic manner. The transactions can include electronic ordering and

distribution, web site generation and on going maintenance, proactive interaction such as faxing, e-mail and electronic funds transfer. Further, the system allows business clients to maintain their own database and allows dynamic access to accounting procedures and management information systems including EFTPOS transactions.

Turn to Fig. 1, their is illustrated schematically the overall operational environment of the preferred embodiment. The preferred embodiment is hereinafter denoted the IWN network which includes various entities interconnected over the Internet 2. The whole network can be implemented utilising CORBA as a common object request broker. CORBA it is a communication protocol that allows transparent communications over a network. That means that the network is invisible to the development programmer in that they program as if the network is not there. The three main parts of the network (the web server, the app server, and the Point of Sale (POS) server) communicate using a CORBA communication layer. A series of java applets and servlets on the web server which will provide references to objects on other servers through the CORBA communication interface. The local client entities can be configured to run Java applets over an Internet browser type environment such as that provided by Microsoft's Internet Explorer or Netscape's Netscape Navigator. Alternatively they may be a permanent Java application.

In a first example arrangement, a series of terminals 3-6 are interconnected via an Ethernet 7 which is in turn connected to a communications hub 8. The terminals 3-6 are designed to run Internet software which, in this case, can comprise a series of Java modules known generically as NETPOS and which are designed to run a network point of sale application. Alternatively, one of the terminals 3 - 6 could be a server for the other terminals and this server inturn talks to the IWN server.

The terminals 3-6 interact with a IWN server 10 The flexibility of the arrangement allows of there to be a client and server relationship in all cases (even when only one machine it is client and server on the same machine). The client has a reference to the server, but the client knows no difference between the local reference and server - CORBA encoding allows for the whole system to operate in a transparent manner. The IWN server 10 is connected behind a firewall 11 to a IWN global data database 12 which can comprise a multiple access distributed database (MADDB) suitable for handling E-commerce transactions. Also connected to the IWN server is an IWN application and transaction server which is provided for handling dedicated transactions in the IWN environment. Direct access to the database is through the IWN application server. The application server can package up the data into objects for the other points (pos server and web server). This concentrates the security concerns into one access point. The CORBA architecture allows the distribution of objects over a computer network. Objects can be written in one language (say java) and referenced using another (say c++). The IWN application and transaction server 13 is directly connected to specific service providers which can include service providers that are able to fulfil order requests 15, third party information vendors able to provide information 16, and service providers that are able to carry out financial transactions such as credit card transactions or the like 17.

Also interconnected to the IWN network are users 18 who can interact with the IWN server 10 utilising a standard web browser or the like.

Also interconnected to the IWN network are suppliers 20 who receive requests for goods, import export agents 21, warehouse storage facilities 22 and producers 23.

The IWN system is based around the MADDB database stored within global data store 12. This database provides

a fast universal access to a relational database and/or and object oriented database which is secure and recognises individual users and the context of each user in terms of the various groups to which he or she belongs. The MADDB can include a relational database with an object handling layer front end for handling each specific purpose.

The MADDB is designed to handle logistics and inventory management as well as information about business relationships etc. The database is interrogated by at least four different sets of user groups including web base users 18, NETPOS users 3-6, product mediators 20-22 and product producers 23. When it is desired to query the database, the application server carries out a database transaction, returning the results of the query.

The MADDB may be though of as having local and global portions. The MADDB is Multi-user, as it is shared in a secure fashion between many clients, client peer groups and customers. This is also why it has a global portion, i.e, all data is collated and available through the application server as single source for output in various forms such as html, as well as other relevant forms (XML, CMI, VRML, shtml, php, pwp, java objects, etc).

The MADDB is regarded as distributed because clients have relevant and alterable data nodes local to their machines. Hence relevant local and global MADDB updating is required. MADDB is dynamic because one local or global MADDB alteration might create several internal MADDB operations. The pos server receives requests from its pos clients which will either be on the same machine or though the clients local network. The pos server will then either get the information from its local data store or download it from the application server. There can be a cache of information taken by the pos server in a transparent manner to the client. The client is able to simply request certain information and the pos server checks its cache if its there and returns it or otherwise downloads it from the

application server (if available) and return and object representing the data.

The local components are only relevant to individual clients and/or client peer groups and is a subset of the global MADDB. It should be noted that the local subset of the global MADDB for a client peer group can be larger than that of a single client. Local portions are regarded as local because the portion is local to the client's location.

The global portion can be considered as the completely current MADDB. Preferably, there is only one authoritative source of global information that must be the application server. Non global information (like faxes etc) can be independently stored. The global portion has the largest subset of information which is of interest to customers of clients or client peer groups (for example; various on-line web shoppers).

A smaller subset of MADDB information is relevant to a client peer group, and an even smaller subset is of interest to a client. The global portion of the MADDB is kept up to date by periodically un(up)loading local information (this is done when needed, for example; after local alteration). The NETPOS data can be implemented having write through capability, meaning that when a data update is requested by a NETPOS terminal the data will go strait to the main data source (if available) not just the cache. The global portion of the MADDB also processes information and passes it back to the client, in order to update their local database (again done when needed, for example; after customer alteration). Users access the MADDB using an interface which performs all tasks local to the user. The application server runs the queries and return the results to the request source, either the web server or the pos server.

The MADDB is linked simultaneously to:

(a) credit verification merchant/s 17 such as MasterCard;

(b) major distributor/s (such as FedEx) 15.

(c) Major information vendors - (Such as currency, tax rates, and other real time market information required in transactions

The transactions are thus able to include on-line ordering, credit verification and order fulfilment, often reflecting dynamic changes in the market.

The Following Automatic Functions can also be Provided

(a) Web page creation and on-going maintenance:

The client is able to change a variable in their inventory management system locally. This in turn automatically updates the global portion of the MADDB, which automatically alters relevant web page elements.

(b) Ordering and order fulfilment:

The MADDB has the functionality to allow point to point real time order fulfilment by facilitating catalogue maintenance (though the inventory system dynamically updating the price and the availability of the products) and offering direct connection to a third party order fulfilment client (such as FedEx). This includes the ability to set multiple relationships for each customer. For example supplier A may set different terms of payment and delivery for each customer. The MADDB interface will communicate this order fulfilment criteria and will establish and maintain relationships with each customer. Each client will also have the option of setting automatic re-order points. These re-order points can be set to trigger the dynamic and continual maintenance of inventory levels in the client's enterprise. The main advantage of this order fulfilment system will be its dynamic nature, for example: a customer queries the MADDB and assuming availability of the product, results in the order lodgement simultaneously with the order fulfilment client and the

product client. The result will be a dynamic update of the level of inventory in the MADDB.

(c) Accounting:

By utilising the combination of inventory levels with supply side transactions (any transactions involving the movement of goods or services for a whole-sale price, i.e., between clients) and demand side transactions (with a customer) the MADDB has the capacity to provide summary information about the financial position of a client in real time. These reports will be displayed in a number of ways and in accordance with the accounting conventions of the geographical area. It will focus particularly in profits by item type and by supplier (which is a client).

(d) Customer information systems:

By providing basic information locally (to the client portion of the MADDB and interface) about a customer and also about any on-line customers who purchase or show interest in products, the MADDB is able to give the client information about demographic factors of their customer base. It also allows them to track the habits and preferences of customers and uses intuitive search mechanisms of the MADDB to build personal relationships with the customer. For example by tracking what a customer has bought it may suggest other related items or similar items by the same supplier. The key aspect here is that the data can be viewed and modified by the client's customer representative who is able to transact with the on-line customer via chat and other communication means to give detailed information to the on-line customer. This is all done directly from the clients local MADDB interface.

(e) Management information systems (particularly inventory):

The MADDB will enable a variety of management information queries to be parsed to the client. An advantage is that the client is able to access information in real time and access information for the local MADDB

which has been entered globally. This includes order fulfilment information, information regarding the use and transactions on-line, and all this in combination with traditional point of sale data.

From the clients side the difference is that the information, once entered in the local MADDB, then periodically updates the global MADDB without any proactive re-entering of information.

The Proactive Functions

The following proactive functions can be provided:

(a) Basic daily transactions and electronic funds transfer:

While the transactions are all being entered in at the local (clients) level, they are also being periodically updated to the global MADDB without being re-entered. This allows the information (local data) to have secure back-up. The electronic funds transfer can be via the public network using tunnelling protocols to encrypt and thereby protect securely all sensitive data.

The establishment of a virtual private network (VPN) will then allow for the free two way transmission of data wherein the local client is able to be updated by the application server of the global MADDB when queries are made to any particular credit verification entity.

(b) E-mail:

The client is able to send/receive e-mail using the same NETPOS interface they use for point of sale transactions and all other group one or two functions.

(c) Fax:

The client is able to send/receive faxes using the same NETPOS terminal. These faxes are sent to the global MADDB at which point they are distributed to the appropriate recipient. Incoming faxes enter the global MADDB and are filed using incoming CLI records.

(d) Accounting:

The client is able to input accounting information and change the price of any resource be it labour, stock item or other and this information is periodically updated to the global MADDB. Once in the MADDB it can be selectively used for designated areas of the clients web site.

(e) Customer information systems:

The point of sale operator (local NETPOS terminal user) is able to input customer details and these are updated periodically to the global MADDB for later retrieval if necessary. The local MADDB can draw a series of summary reports from the global MADDB or selected information can be stored locally.

(f) Management information systems:

Such as inventory, qualitative performance indicators, and customer service.

(g) Order and order fulfilment:

The ability to manually enter an order (to the local MADDB) and then have that order updated to the global MADDB to be later verified and placed and then confirmed or alternatively confirmed immediately.

It will therefore be evident that the preferred embodiment provides for a simplified format of conducting business transactions utilising the Internet as the operator is relieved of the burdens of maintaining web pages and data storage and backup facilities. Additionally, synergistic elements are provided in that a number of interactions including those from information and service providers 15-17 and suppliers 20-23 can be closely integrated with the point of sale units.

It would be appreciated by a person skilled in the art that numerous variations and/or modifications may be made to the present invention as shown in the specific embodiment without departing from the spirit or scope of the invention as broadly described. The present embodiment is, therefore, to be considered in all respects to be

illustrative and not restrictive.

We Claim:

1. An electronic commerce system comprising:

a series of point of sale terminals providing for point of sale information handling of a number of businesses;

an interconnection network interconnecting the point of sale terminals to a central database facility;

a central database facility for storing information about each of said businesses for access by the operators of said point of sale terminals; and

a series of service providers interconnected to said central database facility for meeting requests issued by said point of sale terminals.

2. A system as claimed in claim 1 further comprising:

a series of suppliers interconnected to said central database facility for meeting requests issued by said point of sale terminals.

3. A system as claimed in claim 2 wherein said suppliers include at least one of:

an import/export agent; a warehousing agent or a producer.

4. A system as claimed in any previous claim wherein said service providers include one of:

a third party information vendor providing information upon request;

a financial transaction vendor providing financial transaction authorisation upon request; or

an order fulfilment vendor providing order fulfilment upon request.

5. A system as claimed in any previous claim wherein said point of sale terminals include local database information and programs which are downloaded on demand from said central database facility.

6. A system as claimed in any previous claim wherein the point of sale terminals to interact with the said main

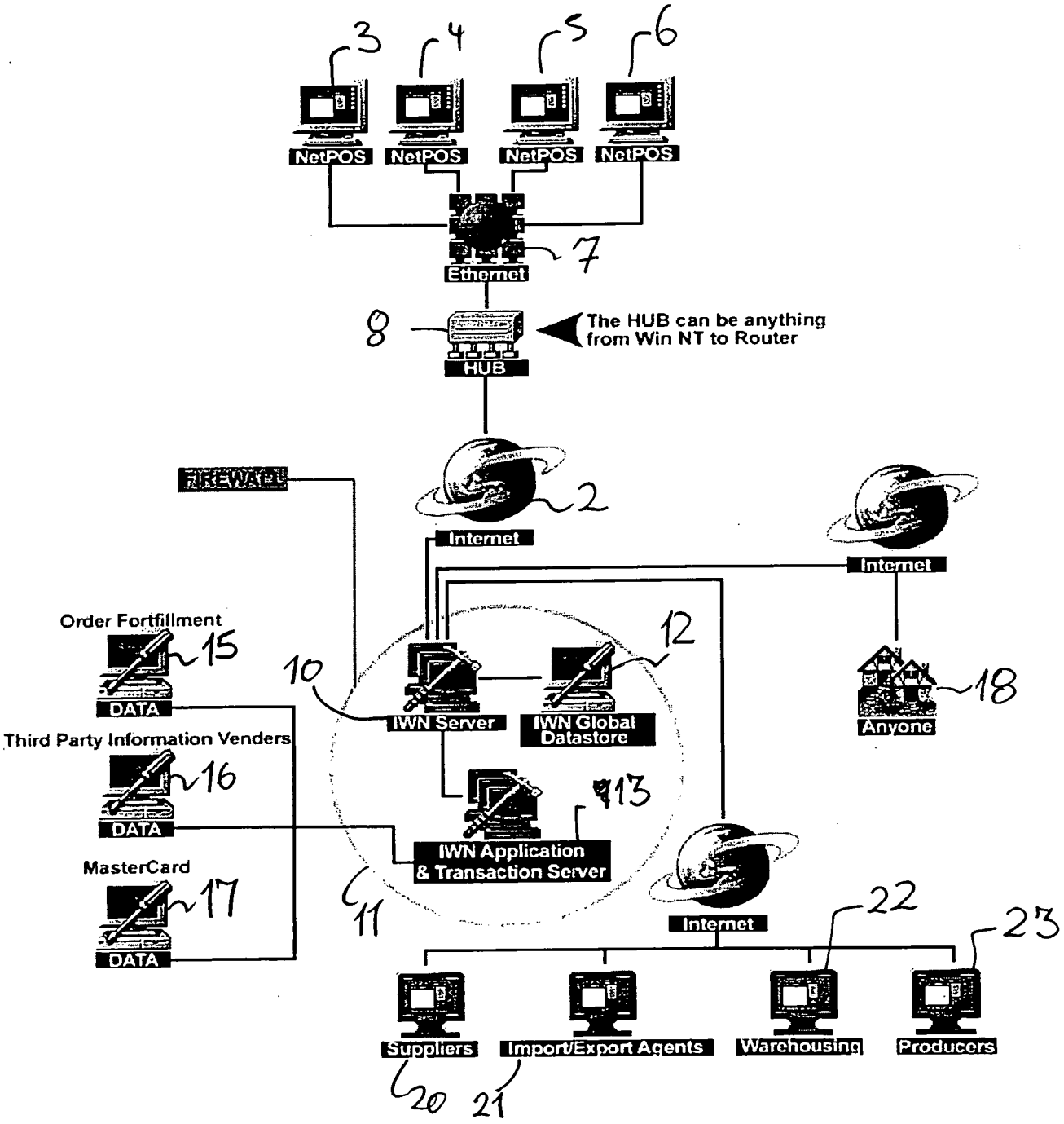
remote data-store wherein any changes to the local datastore are periodically updated to the main datastore, and where relevant produced as part of the clients web page.

7. A system as claimed in any previous claim futher comprising access means for accessing the datastore as a member of the general public using a web browser and further means for communicating in a timely manner directly to the Point of Sale merchant and if that merchant is there then communicating with the merchant in actual time.

8. An electronic commerce system substantially as herein before described with reference to the accompanying drawings.

Abstract

An electronic commerce system comprising: a series of point of sale terminals providing for point of sale information handling of a business; an interconnection network interconnecting the point of sale terminals to a central database facility; a central database facility for storing information about each of the businesses for access by the operators of the point of sale terminals; and a series of service providers interconnected to the central database facility for meeting requests issued by the point of sale terminals.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NetPOS
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The HUB can be anything from Win NT to Router
HUB
FIREWALL
2
Internet
Internet
Order Fortfillment
15
DATA
10
12
IWN Server
IWN Global Datastore
18
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